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| EXAMINER | |
|---|---|
| GORDON, BRIAN R | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1743 | |

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/598,890 | BERNDT, MANFRED | |
| | Examiner | Art Unit | |
| | Brian R. Gordon | 1743 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *23 October 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *17-31 and 33-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *33-42,44-46 and 57* is/are allowed.

6)☒ Claim(s) *17-31 43, 47-55* is/are rejected.

7)☒ Claim(s) *56 and 58-62* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Claim Interpretation*

1. Applicant has amended claim 17 to remove a recitation to the microchip. In view of the amendment it appears as if applicant only intends to claim "a supply element". For the purpose of examination, the new claim is now being interpreted as a supply element comprising at least one substance-containing first supplier, said at least one first supplier having a seal arranged to be opened. The remaining portion of the claim that is directed to the microchip expresses intended use of the supply element. The microchip as presented in the claim is not an element of the invention.

It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Masham, 2 USPQ2d 1647 (1987).

As such, the claim is broadly interpreted as a sealed, substance-container that can be opened. The intentional use in combination with the unclaimed microchip and what happens when the two are used together has no patentable weight on the structure of the supply element.

### *Specification*

2. The disclosure is objected to because of the following informalities: The text is not double-spaced. Applicant uses all caps and centering format for text on page 11.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 27-30, 42-43, 47-49, 51, and 53-55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 27-30, 42-43, and 49 recite the limitation "the supply equipment". There is insufficient antecedent basis or this limitation in the claims.

What is "the supply equipment". What structure of the device considered the supply equipment? The examiner fails to locate where the supply equipment is clearly defined within the specification. Is the supply element and supply equipment the same device?

Claim 30 recites the supply element comprises first and second assemblies. As explained in the specification, drawings, and claim 49, the supply element is used in combination with the assemblies. That one assembly is for holding the microchip and the other assembly for holding the supply element and then used to join and disjoin the supply element and microchip. It appears that the supply element should be considered an element of one of the assemblies since the assembly carries the supply element. Furthermore, it is unclear what is the "said at least one substance the second assembly carries". There is no antecedent basis for such a limitation. The only substance mentioned is contained in the supply element.

As to claim 51, it is unclear if the recitation "a substance in at least one substance-containing supplier disposed within the supply element" is a step in the method or it is intended to be a wherein clause. It appears as if there should be a step of "disposing a substance in at least one substance-container within the supply element.

Claims 53-55 are directed to a step of sealing the at least on end of at least one supplier of the supply element. However, it is unclear where the sealing step occurs in relationship to the steps of independent claim 51. Does the sealing occur before supplying the substances to the passages.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 17-25 and 30-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Lebel et al. US 6,045,755.

Lebel et al. discloses reaction vessel (supply element with substance) embodiments, which are capable of containing reaction mixtures for combinatorial chemistry. The reaction vessels can include, alternatively, stackable, ball-sealed reaction vessels, microtitre-like reaction vessel arrays, arrays of independent reaction vessels, valve-sealed reaction vessels, septum-sealed (allows substance to be removed) reaction vessels, and syringe reaction vessels. Preferable reaction vessels are inexpensive commercially available vessels, microtitre plates, and so forth, capable of resisting the solvents and reaction conditions used in synthesis protocols. Reaction vessel arrays are sealed with various sealing means.

Alternatively, this invention includes reaction vessel arrays which are arrays of syringes, each syringe including a microporous frit for retaining a solid-phase synthesis support while permitting free passage of fluids. Such syringe arrays can be constructed either from a block of solvent resistant plastic having an array of cylindrical cavities forming the syringe bodies or from independent, commercially-available syringes held in an array by a support means. However constructed, fluid manipulation and distribution can be provided by a network of passageways, each such passageway connecting to one syringe body and externally terminated either by a needle or by a septum.

In the case of septum termination, for fluid dispensing to the individual syringe bodies, the septums can be penetrated by needles containing required fluids.

FIG. 11A illustrates a reaction vessel sealed with a single septum. Here reaction vessel 300 is preferably of approximately 4 ml capacity, and is made of glass or a solvent resistant plastic. Septum 301 is of a solvent resistant rubber material capable of being punctured by, e.g., a 14 gauge needle and then resealing itself. Septum 301 is preferably made of a Teflon. coated rubber or of an elastomer of Kalrez type. Collar 302 seals septum 301 to reaction vessel 300, and is of, for example, aluminum or plastic. This invention is adaptable to commercially available, inexpensive septum-sealed reaction vessels, such as the reaction vessels obtained from such suppliers as Phase Separations (Franklin, Mass.) or ColePalmer (Niles, Ill.). Septum-sealed reaction vessels are retained for processing in arrays of standardized structure by holding hold blocks of standardized sizes, as in other reaction vessel embodiments of this invention. One exemplary such holding block is holding block 151 of FIG. 6A.

The invention also includes arrays of syringe-like reaction vessels. Syringe-like reaction vessels include porous frits in their bases for retaining solid-phase substrates while permitting relatively free movement of fluids. A preferred frit is made of polypropylene with a 5-30 micron pore size, a porosity of 50%, and capable of retaining solid-phase microbeads with a diameter >30 microns. Fluid handling for syringe arrays made according to either embodiment can, alternatively, be based on aspiration through needles from individual fluid storage vessels or on aspiration through a fluid distribution block from common fluid storage vessels. Exemplary syringe-like reaction vessel array layouts include a linear array of 8 syringes, an array of 24 syringes in a 4X6 rectangular arrangement, and an array of 96 syringes in a 8X12 rectangular arrangement.

3. Claims 17-21, 23-27, and 29-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Chow 6,071,478.

Chow discloses an analytical or preparatory system comprised as a base unit, an adapter, and a substrate. The adapter is attached to an attachment region on the base unit, and the substrate is attached to an attachment region on the adapter. The adapter permits the base unit to be interfaced with a wide variety of different substrates to perform chemical and biological analytical analyses and preparatory procedures.

The analytical systems may provide for a variety of manipulations of the sample in addition to chemical and biological reactions, such as mixing, dispensing, valving, separation, heating, cooling, detection, and the like.

The sample substrate is usually a microfluidic substrate but could be any other sample substrate capable of receiving test specimen(s) or starting material(s) for

processing or providing a detectable signal, where the base unit manages sample flow, reagent flow, and other aspects of the analytical and/or preparatory technique(s).

The base unit, adapter and sample substrate will be configured so that they may be physically joined to each other to form the analytical system. For example, the attachment region in the base unit (assembly) may be a cavity, well, slot, or other receptacle which receives the adapter, where the dimensions of the receptacle are selected to mate with the adapter. Similarly, the attachment region on the adapter may comprise a receptacle, well, slot, or other space intended to receive the sample substrate and position the substrate properly relative to the adapter and or base unit. The sample substrate will preferably employ mesoscale fluid channels and reservoirs (substance supplier), i.e. where the channels have at least one dimension in the range from 0.1 μm to 500 μm usually from 1 μm to 100 μm.

When the system of the present invention is controlled via digital circuitry, i.e. using a separate conventional computer interfaced with the base unit or using digital control circuitry incorporated within the base unit, it will usually be desirable to provide at least a portion of the operating instructions associated with any particular adapter and/or any particular sample substrate and assay format in a computer-readable form, i.e. on a conventional computer storage medium, such as a floppy disk, a compact disk (CD ROM), tape, flash memory, or the like. The medium will store computer readable code setting forth the desired instructions, where the instructions will enable the computer (which may be a separate or integral computer) to interface with the base unit and to control an assay performed by the base unit upon the sample present on a

sample substrate held by an adapter received on the base unit. The present invention thus comprises the computer program itself in the form of a tangible medium, e.g. disk, CD, tape, memory, etc., which may be used in combination with the system of the present invention. The present invention further comprises systems which include an adapter as set forth above in combination with the tangible medium storing the computer instructions described above. The present invention still further comprises systems which are combinations of one or more sample substrates as generally set forth above, together with a tangible medium setting forth computer readable code comprising instructions as set forth above.

Electrical connections, both for power and signal transfer, will generally comprise conventional connectors in the form of electrodes, pins, plugs, zero insertion force (ZIF) connectors, and the like. Such electrical connections will usually require mating connectors in two of the interface arrays which are brought together when the system is put together. The electrical connectors will often be present on a surface or edge of the interface array so that corresponding components will be engaged against each other when the adapter is mounted in the base unit or the substrate is mounted on the adapter. Similarly, surface or edge electrodes in the adapter-sample substrate interface array may be provided to mate with corresponding surface or edge electrodes on the sample substrate. The electrodes on the sample substrate may then be connected internally in the substrate to the desired reservoirs or fluid flow channels in order to effect electrokinetic flow control, as described in the previously incorporated patents and patent applications. In other cases, however, it will be desirable to provide interface

components in the adapter-sample substrate interface array which directly contact the fluid to be electrokinetically controlled. For example, probes or pins may be provided on the adapter which will penetrate into open wells or through septums (seal) on the sample substrate in order to permit direct contact and application of electrical potential.

The flow biasing connectors may be probes or pins on the adapter which are positioned to directly engage fluids present on or in the sample substrate. For example, an array of pins may be provided on a hinged lid or cover on the adapter plate so that the sample substrate may be positioned on the adapter and the lid cover thereafter closed in order to penetrate the pins into open sample wells on the substrate. The sample wells, of course, need not be open and could be covered with any penetratable membrane or septum which is pierced by the pins when the cover is closed. Other flow biasing connectors include acoustic energy sources (piezoelectric transducers) positioned within the adapter-sample substrate interface array so that they engage the sample substrate at positions intended to induce fluid flow through the flow channels.

***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claim 17 provisionally rejected under the judicially created doctrine of double patenting over claim 20 (incorporating the limitations of the claims which it depends upon) of copending Application No. 09/595,420. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: The invention of claim 20 of the copending application 09/595,420 cannot be practiced or made without the device as claimed in claim 17 of the instant application. While the invention of the copending application incorporates further limitations the supply element claimed in the instant claim is the same as the supply unit including seals as claimed in claim 20.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

***Response to Arguments***

6. Applicant's arguments filed March 30, 2004 have been fully considered but they are not persuasive. Applicant states on page 13, Lebel et al does not disclose a supply element for a laboratory microchip with a micro fluid structure, wherein a seal is opened

to the microchip in response to the supply element and the microchip being joined together. As previously stated in the previous office action and herein above applicant arguments are directed to subject matter that is not considered limitations of the claim. Claim 17 is directed to the supply element. The microchip is not positively claimed thus not considered an element of the of the supply element. The microchip is mentioned in the claim to express that the supply element is intended to be used in conjunction with the microchip (Ex parte Masham, 2 USPQ2d 1647 (1987)).

Applicant also states the instant invention is distinct from the of Lebel for the substance supplier has a size, position, material and shape for causing he seal thereof to be opened to the microchip in response to the supply element and the microchip being joined together and for casing the substance to be transferred from the substance supplier to a substance supplier disposed within the microchip. The examiner asserts the recitation is directed to intended use and process limitations. The microchip is not positively claimed therefore its relationship to the supply element is not considered a structural limitation. As such the examiner interprets the limitation as a supply element that is capable of being opened to release a substance contained within. As to the size, position, material and shape of the seal. If a seal is capable of being opened as that of Lebel, it is inherent that it has the size, position, material and shape as claimed by applicant.

Based on the foregoing the anticipation rejection as based on Lebel is hereby maintained.

Applicant further asserts the anticipation rejection as based on Chow is improper for the office action fails to indicate where Chow includes a seal. As previously stated in the previous office action and herein above a direct quote of the reference as: "The electrodes on the sample substrate may then be connected internally in the substrate to the desired reservoirs or fluid flow channels in order to effect electrokinetic flow control, as described in the previously incorporated patents and patent applications. In other cases, however, it will be desirable to provide interface components in the adapter-sample substrate interface array which directly contact the fluid to be electrokinetically controlled. For example, probes or pins may be provided on the adapter which will penetrate into open wells or through septums on the sample substrate in order to permit direct contact and application of electrical potential. A specific example of such connectors are shown in FIG. 2 below." (column 9, lines 55-67). The septum is equivalent to a seal as claimed by applicant.

In view of the foregoing the examiner hereby maintains the rejection.

***Allowable Subject Matter***

7. Claims 57, 33-42, and 44-46 are allowed.

8. Claims 28, 43, and 47-55 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

9. Claims 56 and 58-62 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach nor fairly suggest a supply element that comprises an attachment arrangement that comprise a bayonet lock.

The prior art of record does not teach nor fairly suggest a method of operating a supply element for a laboratory microchip with a substance source, a microfluid structure connected to the microchip substance source, the method being practiced with a supply element including a sealed substance source, the method comprising: opening a seal in said substance source of the supply element in response to the supply element and the microchip being joined together; while the seal is open transferring the substance from said substance source of the supply element to the supplier disposed in the microchip; and moving the substance from the supplier disposed in the microchip to the microfluid structure by applying a potential to the microchip.

The prior art of record does not teach nor fairly suggest a combination comprising: a supply element and a laboratory microchip comprising the microchip having disposed therein

(a) a microfluid structure

(b) a substance supplier adapted to supply substance to other portions of the microchip; and

(c) a potential supplying arrangement adapted to supply a potential to the microchip for moving substances along paths corresponding to the microfluid structure; and

the supply element including a source for supplying a substance to the supplier disposed in the microchip, said substance supply source of the supply element having a seal confining the substance of the source, the seal being arranged to be opened and supply the confined substance of the source to the substance supplier disposed in the microchip in response to the supply element and the microchip being joined together.

***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, with 2nd and 4th F off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1700.

brg
June 12, 2004

Jill Warden
Supervisory Patent Examiner
Technology Center 1700